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COAL MINING **FUNDAMENTALS**

14 – 16 AUGUST 2018, KUCHING, SARAWAK

TOPICS COVERED

The background to coal

Coal Fundamentals: the “essential science”

The mining of coal

The drilling of coal

How is coal used?

Coal in the blast furnace

Coal in the power station

Coal markets and trade flows

Coal shipping and logistics of material handling

Coal resources and reserves

Expert Course Faculty Leader

He is a geologist with over 40 years' experience in the coal mining and energy industries. He has held leadership roles in industry and has worked as a consultant to the Coal Bed Methane (CBM) and coal mining industry for the past 20 years.

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Course Learning Outcomes

- Understand the historical development of coal and the peculiarities of the SE Asian scene relative to the international experience
- Understand the key parameters that make or break a coal project
- Learn the essential science behind coal
- Understand the relationship between water and gas in coal and the implications
- Understand mining methods, and why one type may be more suitable than another
- Learn the practical aspects of mine management and pit logistics
- Understand the impact and the character of different layers of minerals in a deposit
- Grasp the physical constraints that affect drilling, and the pros and cons of each method
- Comprehend the practicalities of material handling with coal, and the holistic pit to port (mind to harbor) system
- Learn what greenhouse emissions and a warming world mean for the coal industry
- Comprehend the differences between resources and reserves and the requirements to move resources to reserves
- Understand the basic economic drivers behind coal projects
- Learn how to undertake due diligence on a coal project
- Participate in practical discussions and exercises that enhance practical understanding

Who Should Attend

The course is generally applicable to anyone who would like to understand more about coal, including mining engineers, geologists, administrators, executives, potential investors in coal projects, and financial analysts. The course is designed to be particularly accessible to young professionals, and those who may already have a different background and wish to understand more about this important international resource.

About Our Expert Course Trainer

He is a geologist with over 40 years' experience in the coal mining and energy industries. He has held leadership roles in industry and has worked as a consultant to the Coal Bed Methane (CBM) and coal mining industry for the past 20 years. He has been a Managing Director of a leading directional drilling service and technology supply company, and a Research Leader in coal seam gas associated with a major Australian CRC.

He is a Managing Director of CoalBed Energy Consultants (www.coalbed.com.au), which provides project management, technical services, business development, due diligence, and consulting services in coal mining, CBM (CSG), Coal Mine Methane (CMM), drilling, fugitive emissions and related areas. CoalBed counts in its client list all of the major mining companies in Australia, and many CBM players. He and his son Duncan, have developed popular training courses in Coal Mining Fundamentals, CBM Fundamentals, CBM production and completion, and drilling which have been delivered to a range of clients in Australia and overseas.

CoalBed have developed unique skills in the evaluation of fugitive emissions from shallow open cut mining operations and act as Estimators for companies reporting to the National Greenhouse Officer for Carbon Tax compliance. The company also manages surface to in-seam directional drilling programs for geological exploration and degasification, and have developed expertise in the use of directional drilling data for improved geological modelling.

He has worked in most of the major coal seam gas basins throughout the world, and assisted with technology transfer of advanced directional drilling technology into emerging markets such as China, India, South Africa, Central-Asia and Eastern Europe. Recent related experience includes developing projects in Indonesia, Mongolia, Kazakhstan, South America and Southern Africa.

He is the author of a number of papers that have been published in a range of journals and proceedings, and was also a co-recipient of the prestigious Stefanko Award for best paper at the 2007 SME Conference in Denver, CO, USA for a paper titled "A Petroleum Industry Approach to Coal Mine Drainage".

He holds a BSc in Geology from the University of Newcastle, an MSc in Geology from the University of New England and an MBA from Deakin University. He is a member of the Geological Society of Australia and the Society of Petroleum Engineers.

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3 Day Course Outline

Introduction: the background to coal

- Overview of the global coal industry
- What is coal and how it formed?
- Coal and gas; what is the nature of the association
- Coal and the global energy mix

Coal fundamentals: the “essential science”

- Coal types, from peat to anthracite
- Basin analysis, the sedimentary and tectonic framework for coal formation
- The character of a coal field
- Key concepts; coal quality, geological structure, geomechanics
- Coal layering in the subsurface
- Physical and chemical properties of coal
- End user issues: what is the difference between thermal and coking coal
- Sampling and exploration – gathering the right data
- Where are favourable formations for coal?

How is coal formed?

- Coal basins and geological time
- Depth of burial and its impact upon coal quality
- State of the game in SE Asia and overseas

The mining of coal

- Open cuts and open casts
- Underground mining, shafts, adits and drifts
- Cost factors; when do you choose underground over open cut?
- The ‘environmental’ side of coal mine management
- Practical pit management issues
- Dealing with dilution and the effect of non-coal layers on productivity
- The relationship between water and gas in an operating coal mine
- The new greenhouse game and implications for coal

The drilling of coal

- Exploration and sampling
- Rotary drilling, limitations and benefits
- Core drilling and what it delivers
- Drilling for blasting
- Core size and sampling
- Directional drilling, when to apply?

How is coal used?

- Power generation, steel, metallurgical and cement industries
- Steam generation – heat from burning to create steam to drive turbines
- Coke manufacture – chemical and physical properties of coal to go into coke ovens
- Coal specifications, what are the important parameters?
- Blending coal; what can be achieved and why it would be done

Coal in the blast furnace

- How does it work, and which coals are suitable?
- What is PCI coal and when would you use it?
- Global patterns in steelmaking

Coal in the power station

- How does it work, and which coals are suitable?
- It’s all about energy delivered per mass of coal produced, so how does that work?
- Global patterns in power generation

Coal quality – the detail

- Thermal coal specifications
- PCI coal specifications
- Power coal specifications
- Terminology; e.g. ARB, AD, DAF etc.

Coal markets and trade flows

- Geography of trade flows
- Supply and demand dynamics
- Recent trends and developments

Coal shipping and logistics of material handling

- Pit to port (harbor to mine) material handling realities
- Trains, ships and ports; how does it work?
- Trends in the distribution networks associated with coal
- Coal marketing; how does it work?
- The role of coal traders in the network

Coal resources and reserves

- How we measure resources and reserves and why it is important
- What do we need to do to increase reserves?
- Pitfalls and caveats; understanding reserve certification reports
- Tenure; the competition between mining, CBM and other uses of coal

Due diligence

- How to evaluate a coal project: what is important, and what is not?
- Key methods used in the successful evaluation of coal projects
- Case studies; ‘mock’ projects based on actual data

Wrap up and discussion

- Review of the major factors that determine success or otherwise of a coal project
- Where to from here? What can likely be done to improve coal economics?
- The impact of other forms of energy – where will future coal efforts be targeted?

Exercises

- A number of short exercises and workshops designed to reinforce key topics

Video

- The course material will be supplemented by videos illustrating key subject matter

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	PER PARTICIPANT	2 PARTICIPANTS OR MORE	IN-HOUSE TRAINING
3 Day Programme	SGD 3,685	SGD 3,485	Guaranteed Minimum 40% Off Normal Price

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